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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/598,653

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Takashi Ueda

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10/01/2008

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EXAMINER

KAUCHER, MARK S

ART UNIT

PAPER NUMBER

4131

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/598,653	<b>Applicant(s)</b> UEDA, TAKASHI	
	<b>Examiner</b> MARK S. KAUCHER	<b>Art Unit</b> 4131	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/7/2006</u> .                                                | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 and dependent claims 2-11 list a lower limit of zero for the range of coagulant in step C, which suggests that it is an optional step although it appears to be a required step.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

Art Unit: 4131

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-9 and 11 are rejected under 35 U.S.C. 103(a) as being obvious over Kawashima et al. (JP 59091103) in view of Fukuda et al. (JP 07138314).

As to claim 1, Kawashima et al. teaches a method of manufacturing coagulated particles from latex prepared via emulsion polymerization. The process of first adjusting the slurry to between room temperature and 100°C (A). See page 10. This step is followed by addition of polyethylene oxide (0.09 parts) (B) and a coagulant, which appears to be within the range of 0-1.5 parts by weight (C). See examples 5 and 4. Addition of further coagulant, which appears to be within the range of 0.2-10 parts by weight, to form an aqueous suspension containing coagulated polymer particles of 50-500 µm (D). See examples 5 and 4 and table 1 and 2. And finally adjusting the temperature to 80°C. See examples 5 and 4.

Kawashima et al. further points out that “the slurry temperature in the second and following processes varies depending on the type of the thermoplastic resin emulsion and can be therefore determined while observing the properties of the powder and the coagulating status. If the slurry temperature is too high, the particles may coagulate excessively, generating coarse particles, whereas the slurry temperature is too low, the resulting powder particles may become fine particles before the coagulation is complete.” See pages 10-11.

Art Unit: 4131

Kawashima et al. is silent on adjusting the temperature of the emulsion polymerization within the range of the  $T_m \pm 15^\circ\text{C}$  (instant claim 1) or  $\pm 10^\circ\text{C}$  (instant claim 5).

Fukuda et al. (JP 07138314) teaches a method of moderate coagulation within a temperature range of  $T_m \pm 10^\circ\text{C}$ . See paragraph 16. Once again, a delicate balance between the production of fine and coarse particles as a function of temperature is described. See paragraph 16.

It would have been obvious to one with ordinary skill in the art at the time the invention was made by modifying Kawashima et al. by adjusting the temperature of the emulsion-polymerized latex to  $T_m \pm 10^\circ\text{C}$  as suggested by Fukuda et al. because the balance between coarse and fine particles can be optimized.

As to claim 2, Kawashima et al. teaches the use of additional nonionic surfactants in step D such as polyvinyl alcohol. See pages 6 and 7.

Kawashima et al. is silent on the weight percentage of additional polyvinyl alcohol that could be added in step D, although one with ordinary skill in the art at the time the invention was made would modify the weight percentage to that of the amounts for the nonionic surfactants (i.e. polyethylene oxide) mentioned in example 5 that fit into the broad ranges mentioned in claim 2.

As to claim 3, Kawashima et al. is silent on the volume-average particle size of the emulsion polymerization. The broad volume-average particle size of 50-500 nm

Art Unit: 4131

recited in claim 3 encompasses the typical particle sizes from emulsion polymerizations. See Weier et al. (US 20020013387) paragraph 5 and Blease et al. (US 20030092806) paragraph 32.

As to claim 4, the polymer solid content was 30%, which is within the range recited in claim 4. See examples 4 and 5, which refer back to example 1.

As to claim 6, a 7.5% solution of polyethylene oxide that has a molecular weight of 4,300,000-4,800,000 (i.e.  $430 \times 480 \times 10^4$ ) is added in an amount of 0.09 parts by weight based on 100 parts by weight of the polymer solid. See examples 4 and 5.

As to claim 7, Kawashima et al. teaches the use of additional nonionic surfactants such as polyvinyl alcohol. See pages 6 and 7.

Kawashima et al. is silent on the weight percentage and amounts of additional polyvinyl alcohol that could be added in step D, although one with ordinary skill in the art at the time the invention was made would modify the weight percentage and amounts to that of the amounts for the nonionic surfactants (i.e. Polyethylene oxide) mentioned in example 5 that fit into the ranges mentioned in claim 7.

As to claim 8, the coagulant is in an aqueous solution and is an inorganic acid. See examples 4 and 5.

Art Unit: 4131

As to claim 9, Kawashima et al. discloses the use of commonly-known thermoplastic resin emulsions that can be used in the invention such as a (meth)acrylic acid ester monomer (e.g. 100 percent by weight of an acrylic acid ester) grafted onto a methacrylate/butadiene/styrene resin (e.g. 50 percent by weight of an methacrylic acid ester, 40 percent by weight of a aromatic vinyl monomer, and 10 percent by weight of a vinyl monomer). Such resins were known at the time of the invention. See page 6.

As to claim 11, Kawashima et al. discloses the use of commonly-known thermoplastic resin emulsions that can be used in the invention such as a butadiene (e.g. 100 percent by weight of a butadiene) grafted onto a methacrylate/butadiene/styrene resin (e.g. 50 percent by weight of an methacrylic acid ester, 40 percent by weight of a aromatic vinyl monomer, and 10 percent by weight of a vinyl monomer). Such resins were known at the time of the invention. See page 6.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawashima et al. in view of Fukuda et al. as applied to claim 1 above, and further in light of Sunagawa et al. (US 6,723,762).

Kawashima et al. discloses the use of commonly-known thermoplastic resin emulsions for its method.

Kawashima is silent of the monomer mixture mentioned in claim 10.

Sunagawa et al. teaches of a resin prepared by emulsion polymerization of 75 parts by weight of a mixture containing methyl methacrylate (87 percent by weight of a

Art Unit: 4131

methacrylic acid ester) and butyl methacrylate (13 percent by weight of an methacrylic acid ester having a C<sub>2-8</sub> group) and graft polymerizing them with 25 parts by weight of a mixture containing methyl methacrylate (24 percent by weight of a methacrylic acid ester), butyl acrylate (56 percent by weight of an acrylic acid ester other than methacrylate), and styrene (20 percent by weight of an aromatic vinyl monomer). The resin falls within the ranges recited in claim 9. See table 1, example 4.

It would have been obvious to one with ordinary skill in the art at the time the invention was made by modifying Kawashima et al. with the resin suggested by Sunagawa et al. because one would want to manufacture coagulated with low water content at moderate temperatures for the preparation of articles which are excellent in physical properties such as impact resistance and heat resistance, and chemical properties such as solvent resistance, acid resistance and alkali resistance.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARK S. KAUCHER whose telephone number is (571)270-7340. The examiner can normally be reached on Monday to Friday, 8:00 AM to 5:00 PM EST.

Art Unit: 4131

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on 571-275-5007. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R. Sample/  
Supervisory Patent Examiner  
Art Unit 4131

/MARK S KAUCHER/  
Examiner, Art Unit 4131